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TITLE = Implementation for streaming SOAP message with Web Services security
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DOSSIER JP920030034
SECURITY IBM CONFIDENTIAL - PREPARED BY IBM ATTORNEY
PRIORITY 20030307
TITLE Implementation for streaming **SOAP** message with Web Services **security**
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CLASS CLASSINT: JP920030034JP1 G07F 7/00
DOCKETS DOCKET NUMBER STATUS RATE ISSUE DATE PAT. NUMBER
JP920030034JP1 Pending
ATTYRATE 3 20030212 Kazuo I Kondoh/Japan/IBM
DIVISION TRL
DESCRIPT (Field of the invention)
The present invention relates to processing of a data file, more
specifically to processing of an XML document such as a **SOAP** message
used in web service.
(Object)

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1:SRC 2:SEL 3:BRW 4=DSP ALL 5=XPLN 6=LIST 7=DOC-1 8=DOC+1 10=P-1 11=P* 12=CPY



To provide a technique for sending/receiving a **SOAP** message with a little burden on a processing capability or memory of a client and to implement a web service system appropriate for using a terminal device with such a limited capability as a client.

(Solution)

The present invention creates a **SOAP** message without using DOM by generating a body part by sequentially performing such a process of a message as encryption or signing for each piece of the message, generating a **header** part by using information acquired during the process, and by combining the body part and the **header** part. The present invention also breaks a **SOAP** message without using DOM by acquiring **header** information with parsing a received **SOAP** message and sequentially performing decryption or verification of a signature of a body part according to the **header** information.

(Advantages of the Invention)

As mentioned above, the present invention provides a technique for sending/receiving a **SOAP** message with a little burden on a processing capability or memory of a client and implements a web service system appropriate for using a terminal device with such a limited capability as a client.

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The present invention also provides a method for processing a body part, which is performed according to a definition described in a **header** part, in a streaming process for a document file including a **header** part and a body part.

Kazuo I Kondoh/Japan/IBM 19-Aug-2003

CLAIMS

CLAIMS AT FILING: Claims for docket JP920030034JP1

(1) A method for creating a **SOAP** message characterized by comprising: a first step of reading out a message body from predetermined storing means predetermined piece by piece

a second step of generating a body part of a message by sequentially performing a process on read out said pieces and holding the body part in a work area in predetermined storing means, and at the same time, acquiring information on the process

a third step of generating a **header** part of a message including acquired said information on the process and holding the **header** part in a work area of predetermined storing means and

a forth step of composing a **SOAP (Simple Object Access Protocol)** message by reading out said body part and said **header** part from the work area of said storing means and combining said parts.

(2) The method for creating a **SOAP** message according to Claim 1,

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characterized by sequentially encrypting pieces of said message and acquiring a reference ID for referring to an encrypted part in said body part and information on a way of encryption in said second step.

(3) The method for creating a **SOAP** message according to Claim 1, characterized by signing a piece of said message of a processing object and acquiring a reference ID for referring to a signed part in said body part and information on a way of signing in said second step.

(4) The method for creating a **SOAP** message according to Claim 1, characterized by performing a number of processes on a piece of said message and acquiring information on each process in said second step.

(5) A method for processing a **SOAP** message characterized by comprising:

a first step of extracting information on a process of a body part from a **header** part of a **SOAP (Simple Object Access Protocol)** message and storing the information into a work area of predetermined storing means, while parsing the **SOAP** message and
a second step of sequentially processing a predetermined part of said body part according to information stored in the work area of said

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storing means, while parsing said SOAP message.

(6) The method for processing a SOAP message according to Claim 5, characterized by extracting decryption information including an encrypted part of said body part and a way of decryption in said first step and decrypting a part of said body part specified by extracted said decryption information according to the decryption information in said second step.

(7) The method for processing a SOAP message according to Claim 5, characterized by extracting verification information including a signed part of said body part and a way of signing in said first step and verifying said signature for a part of said body part specified by extracted said verification information in said second step.

(8) The method for processing a SOAP message according to Claim 5, characterized by parsing said predetermined part processed by said second step in said body part by using an independent parser, and recursively performing said first and second steps.

(9) The method for processing a SOAP message according to Claim 8, characterized in that said second step comprises the steps of:

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creating said independent parser in starting a process of said predetermined part of said body part processing said predetermined part and parsing processed said predetermined part by using said independent parser.

(10) A method for processing data for processing a data file conforming to a specification of description for including a **header** part and a body part with a processing object of a predetermined process being set in the body part and information on the process and information specifying the processing object being described in the **header** part, characterized by comprising:

a first step of reading out an original data predetermined piece by piece from a predetermined storing means storing the original data of said data file

a second step of generating a body part of said data file by performing a process on said read out piece in a streaming process and holding the body part in a work area of predetermined storing means, and at the same time, acquiring information on the process

a third step of generating a **header** part of said data file including information on acquired said process and holding the **header** part in a

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work area of predetermined storing means and
a fourth step of composing said data file by reading out said body
part and **header** part from the work area of said storing means and
combining said parts.

(11) A method for processing data for processing a data file
conforming to a specification of description for including a **header**
part and a body part with a processing object of a predetermined
process being set in the body part and information on the process and
information specifying the processing object being described in the
header part, characterized by comprising:

a first step of extracting information on a process of a body part
from a **header** part of the data file and storing the information into
a work area of predetermined storing means, while parsing said data
file by a first parser and

a second step of processing a predetermined part of said body part in
a streaming process according to information stored in the work area
of said storing means, while parsing said data file by said first
parser,

wherein said second step comprising the steps of:

creating a second parser independent of said first parser in starting

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a process of said predetermined part of said body processing said predetermined part and parsing processed said predetermined part by using said second parser.

(12) An information processing apparatus characterized by comprising: a processing unit for performing a predetermined process on a body part of a **SOAP (Simple Object Access Protocol)** message, and at the same time, acquiring information on the process a message composing-control unit for reading in said **SOAP** message predetermined piece by piece and passing the predetermined piece of said message to said processing unit on the basis of setting for the process of said message determined previously a **header** generating unit for generating a **header** part of said **SOAP** message including information on said process acquired by said processing unit and a message composing unit for composing a **SOAP** message by combining a body part processed by said processing unit and a **header** part generated by said **header** generating unit.

(13) The information processing apparatus according to Claim 12, characterized in that said processing unit sequentially encrypts

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pieces of said message and acquires a reference ID for referring to an encrypted part in said body part and information on a way of encryption.

(14) The information processing apparatus according to Claim 12, characterized in that said processing unit signs a piece of said message of a processing object and acquires a reference ID for referring to a signed part of said body part and information on a way of signing.

(15) An information processing apparatus characterized by comprising: a breaking-control unit for detecting a **header** part and a body part by parsing a **SOAP (Simple Object Access Protocol)** message and further detecting a processing object in the body part

a **header-processing** unit for extracting information on a process of said body part from said **header** part detected by said breaking-control unit and

a processing unit for performing a process on said processing object in said body part according to information extracted by said

header-processing unit,

wherein said breaking-control unit parses said **SOAP** message from the top in order, passes detected said **header** part to said

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header-processing unit, and also passes said processing object in detected said body part to said processing unit, and wherein said **header-processing** unit and said processing unit sequentially process a part of said **SOAP** message received from said breaking-control unit.

(16) The information processing apparatus according to Claim 15, characterized in that said processing unit creates a parser independent of that of said breaking-control unit in starting a process on said processing object of said body part and further parses the processed processing object by using the independent parser.

(17) The information processing apparatus according to Claim 16, characterized in that said **header-processing** unit extracts decryption information including an encrypted part of said body part and a way of decryption, and said processing unit performs a decryption process on a part of said body part specified in said decryption information extracted by said **header-processing** unit according to the decryption information.

(18) The information processing apparatus according to Claim 15, characterized in that

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said **header-processing** unit extracts verification information including a signed part of said body part, a way of signing and a signature value, and at the same time, verifies a signature by using the signature value,
said processing unit verifies a signature by using a digest value calculated on the basis of said verification information for a part of said body part specified in extracted said verification information.

(19) A program for processing data by controlling a computer, characterized in that said program causes said computer to execute: a first process of reading out an original data predetermined piece by piece from predetermined storing means storing original data of a data file conforming to a specification of description for including a **header** part and a body part with a processing object of a predetermined process being set in the body part and information on the process and information specifying the processing object being described in the **header** part
a second process of generating a body part of said data file by processing read out said pieces in a streaming process and holding the body part in a work area of predetermined storing means, and at

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the same time, acquiring information on the process
a third process of generating a **header** part of said data file
including acquired said information on process and holding the **header**
part in a work area of predetermined storing means and
a fourth process of composing said data file by reading out said body
part and said **header** part from the work area of said storing means
and combining the parts.

(20) The program according to Claim 19, characterized in that said
data file of a processing object is a SOAP (Simple Object Access
Protocol) message.

(21) A program for processing data by controlling a computer,
characterized in that said program causes said computer to execute:
a first process of, while parsing a data file conforming to a
specification of description for including a **header** part and a body
part with a processing object of a predetermined process being set in
the body part and information on the process and information
specifying the processing object being described in the **header** part
by a first parser, extracting information on a process of a body part
from a **header** part of the data file and storing the information into
a work area of predetermined storing means

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 a second process of creating a second parser independent of said first parser
 a second process of, while parsing said data file by said first parser, processing a predetermined part of said body part in a streaming process according to information stored in a work area of said storing means and
 a step of parsing a processed said predetermined part by using said second parser.
 (22) A recording medium recording a program described in any of Claims 19 to 21 in a computer readable manner.
 Kazuo I Kondoh/Japan/IBM 19-Aug-2003
 IBMUSE At this time, no plan yet but in future, this tech. may be used in Web application product, for example WebSphear etc.
 Kazuo I Kondoh/Japan/IBM 19-Aug-2003
 RELATED none
 Kazuo I Kondoh/Japan/IBM 19-Aug-2003
 USEBYOTH Web Application software company or internet provider, may be.
 Kazuo I Kondoh/Japan/IBM 19-Aug-2003
 DISCOVER Difficult; e.g.; with reverse engineering or examination of available code

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 1:SRC 2:SEL 3:BRW 4=DSP ALL 5=XPLN 6=LIST 7=DOC-1 8=DOC+1 10=P-1 11=P* 12=CPY

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From disclosure JP8-2002-1274 at time of final decision 13-Feb-2003
PRIORART (Non-Patent Document 1)
Bob Atkinson et al., "Web Services **Security** (WS-Security)", (online),
May 23, 2002, (searched on February 27, 2003),
Internet<<http://www.microsoft.com/japan/msdn/webservices/spec/ws-security.asp>>
Kazuo I Kondoh/Japan/IBM 19-Aug-2003
DIVULGAT No
From disclosure JP8-2002-1274 at time of final decision 13-Feb-2003
All comments above have been modified by Kazuo I Kondoh/Japan/IBM
19-Aug-2003

R0601 * END OF DOCUMENTS IN LIST - ENTER RETURN OR ANOTHER COMMAND.

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